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ABSTRACT

This paper reports briefly on some recent efforts to find a process for delineating people's needs as a basis for establishing criteria in designing and evaluating educational services. The paper is designed to help educational decisionmakers learn how to get useful information about needs. The authors have tentatively identified a class of problems, the solution to which appears to require the invention of some decision rules and procedures. A set of such rules and procedures called "Needs Analysis Methodology" has been developed. The paper indicates one of the basic concepts and design characteristics of Needs Analysis Methodology at a point in time. It reviews some concepts that have been guiding the developmental effort and describes the general framework or design methodology. References and appendixes extend and illustrate the discussion contained in the body of the paper. (Parts of Appendix C may reproduce poorly.) (Author/DN)

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NEEDS ANALYSIS METHODOLOGY: A PRESCRIPTIVE SET OF RULES AND PROCEDURES FOR IDENTIFYING, DEFINING, AND MEASURING NEEDS

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Needs assessment is becoming one of education's "hot topics." One reason for this is that the clients are restless. Students, parents, employers, taxpayers, and others are demanding educational services that meet their needs, and they are less willing than they were in the past to have educators define their needs for them. Accordingly, it is becoming politic for educators to learn, and to respond to, their clients' conceptions of what the needs are.

A second reason for interest in needs assessment is that educational agencies are adopting more systematic decision-making strategies. Consequently, the formal assessment of needs is coming to be viewed as an essential information input to educational management at all levels from the classroom to national programs.

Clearly, people's needs ought to be among the basic criteria for designing and for evaluating educational services. How to get useful information about needs, therefore, is a continual problem for educational decision-makers. As Kaufman observes, many approaches are being tried, "ranging from asking teachers and educators what they think the needs are

through development of questionnaires for educators, community leaders, and learners, and the obtaining of empirical learner performance data" (1972, p. 28).

There is as yet no definitive conceptualization of the problem. Although some processes for delineating needs are evolving, and although at this moment there are probably hundreds of studies called "needs assessments" going on, Kaufman cautions that "Professionals specializing in this difficult area emphasize the tentative nature of any models or procedures extant" (1972, p. 46).

This paper is a brief report on some recent efforts in this area by the authors and their co-workers. They have tentatively identified a class of problems, the solution to which appears to require the invention of some decision rules and procedures. A set of such rules and procedures, now called "Needs Analysis Methodology," has been under development since the spring of 1972. This paper is intended to indicate some of the basic concepts and design characteristics of Needs Analysis Methodology at a point in time.

There are two parts and several appendices to to the paper. The first part reviews some concepts which have been guiding the developmental effort. The second part describes the general framework or design of the methodology. References and appendices serve to illustrate and extend the necessarily brief discussion contained in the body of the paper.

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I. SOME GUIDING CONCEPTS

In the literature, inquiry into needs is viewed as a component of a number of different conceptual models. In terms of systems engineering, for instance, Hall (1962) identifies "needs research" as a component of "problem definition." Kaufman (1972) views "the determination of educational needs" as a component of planning educational systems. Inquiry into needs falls within the scope of "marketing research," according to Philip Kotler (1972).

The various models of which needs assessment is a component have a common focus on providing information for use in decidion-making. Needs assessment, it might be said, is a problem of decision-oriented inquiry, as defined by Cronbach, Suppes, and others (1969, p. 20):

> In a decision-oriented study the investigator is asked to provide information wanted by a decision-maker, a school administrator, a government policy-maker, the manager of a project to develop a new biology textbook, or the like. The decision-oriented study is a commissioned study.

Needs Analysis Methodology is being developed as a deliberate process for decision-oriented inquiry into needs. This orientation is reflected in the methodology's stated purpose: "to provide useful information about needs."

Certain concepts have been particularly relevant to the development of Needs Analysis Methodology. They are important to discuss here because they illuminate what the methodology attempts to do and why the methodology

is being designed with certain characteristics. The first three of these concepts to be discussed are "need," "need fulfillment," and "discrepancy."

Need

The term "need" is part of a lexicon which includes other terms such as "goal," "intent," "problem," "demand," "deficit," "expectation," "want," "aspiration," "desire," and others. Some authors have sought to provide definitions which distinguish among two or more of such terms. For instance, Jerome Bruner (1965) seeks to distinguish between a "need" and a "goal."

In common usage, one meaning of the word "need" is "something useful, required, or desired that is lacking" (Webster's Dictionary, 1972). There are similar definitions in the literature. Hall says, for instance, "a need is a lack, want, demand or desire felt by an individual or a social group" (1962, p. 74). Kaufman says:

> An educational need is a measurable outcome discrepancy between "what is" and "what should be." If there is no difference between where we are and where we should be, then we have no "need." (1972, p. 49).

Popham defines an "educational need" as the difference between "desired learner outcomes" and "current learner status" (1972, p. 23).

The foregoing definitions are helpful. They imply several components of the problem to which Needs Analysis Methodology is addressed: (a) the type of need that is of concern to someone has to be identified, (b) the desired status has to be specified (defined) as the basis for determining

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what is lacking, and (c) the current status has to be measured in terms of the desired status. In other words,

-- identifying a type of need that is of concern serves to focus the inquiry;

-- defining the need provides the criteria for measuring the current status; and

-- measuring the current status, in terms of the desired status, provides information useful in deciding what to do about the status.

The problem of defining the desired status has presented an operational problem in the development of Needs Analysis Methodology: what to call the desired status. A tentative solution has been to redefine the term "need," for purposes of needs analysis, to refer to the desired status. Thus, in the context of Needs Analysis Methodology, a "need" is a concept of some desired set of conditions; a "need" is a concept of "what should be." It will be shown later in this paper that this redefinition is useful in inquiring into needs and that it does not eliminate the sense of discrepancy which the literature appropriately stresses.

Need Fulfillment

If a need is a concept of desired status or "what should be," then "need fulfillment" refers to the status of "what is." Need fulfillment is the set of conditions existing at a point in time as observed in terms of some desired set of conditions.

It follows that observations of need fulfillment are meaningful only in relation to some concept of need. This has practical implications for

the sequencing of needs analysis procedures, as will be seen in Part II of this paper.

Discrepancy

The observed difference between "what should be" (a need) and "what is" (need fulfillment) can be called a "discrepancy." A discrepancy thus is defined entirely by a concept of some need and by the observation of need fulfillment in terms of that concept.

The typical relationship among the concepts of "need," "need fulfillment," and "discrepancy," as defined for Needs Analysis Methodology, can be illustrated by the diagram in Figure 1.

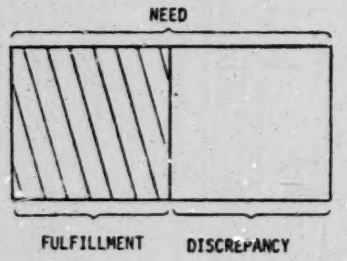

Figure 1. Relationship among the concepts of "need," "need fulfillment," and "discrepancy," as used in Needs Analysis Methodology.

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Next will be discussed two role-concepts that have been relevant to the development of the methodology: the concepts of "needer" and "definer".

Needer

Needs are attributable to people; people have needs. Therefore a need-concept (i.e. "what should be") is meaningful only in relation to someone to whom the need is attributable. It follows that an inquiry into needs must be focused on the "who" and the "what," together. Needers may be individuals or groups. Some hypothetical combinations of "who" and "what" would be:

"Johnny's need for learning resources"

"Elementary teachers' need for inservice training"

"School administrators' needs for information"

Identifying a combination of "who" and "what," needer and need, serves to focus inquiry and to partially define the need. But that is just a beginning. In order for information to be gathered, further specification almost always is required. The source of that specification is the subject of the next role-concept: "definer."

Definer

A need is a concept of "what should be" with respect to some needer. A concept implies a conceiver -- a person who conceives. To conceive is to define. A need, therefore, is a concept of "what should be" in

relation to some needer, as defined by someone. For purposes of needs analysis, that someone can be called a "definer."

A definer, then, is a person or group who provides a detailed specification of a needer's need. Some examples of definers are: teachers, administrators, parents, students, employers, "experts," supervisors. The particular definers are chosen in relation to particular combinations of needers and needs.

When this role-concept of definer is combined with the foregoing concepts of need and needer, one can formulate a basic question which frames the inquiry into needs. This question is: "Who needs what, as defined by whom?"

"Who needs what, as defined by whom?" This is the terribly basic needs analysis question. It contains the three components of needer, need, and definer. The "who" or needer component is included because a needs analysis must be focused on the needs of specific individuals or groups. The "what" or need component is included because of needs analysis must be focused on the types or categories of need about which data are required.

The third component, "as defined by whom," refers to the necessity for identifying which people should define the needer's need. Without definition, it would not be possible to measure need fulfillment. Since different people define needs differently, it is often of crucial importance who provides the definition. Should it be the needs analyst? Should it be the

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needer? Should it be someone else -- say, an "expert" or specialist of some kind? Should there be multiple definers? For a hypothetical combination of needer and need, some examples of multiple definers would be:

> "Johnny's need for learning resources, as defined by his teachers"
>
> "Johnny's need for learning resources, as defined by his parents?
>
> "Johnny's need for learning resources, as defined by the publishers of multi-media language arts series 'X'."
>
> "Johnny's need for learning resources, as defined by Johnny."

Because needs can be defined from alternative points of view and because the alternative definitions will differ, the choice of definers becomes crucial to the validity, reliability and utility of the data.

The concepts presented above have been discussed in the absence of a particular context. In applying Needs Analysis Methodology, however, there always is a context. An essential part of the context is the person or persons who want data for decision-making: the information user.

Information User

Simply stated, an information user is a person, or a group of persons acting as a group, who want to use information about needs in making their decisions about meeting people's needs. The purpose of needs analysis is to give information users some information they can use in the decisions

they make. Without the concept of information user, there is no point to needs analysis.

Information users are decision-makers*. Since NAM has the purpose of providing information users with information about needs, it is a form of "decision-oriented research" (Cronbach and Suppes, 1969). It is crucially important that the intended information users be identified and that they, or their designated agents, participate in the framing of the needs analysis inquiry. Without the participation of the information user, there is great risk that any inquiry will fail to produce useful information and the resources employed in the process will be wasted. In Needs Analysis Methodology, therefore, the information user is asked to designate the referents for the basic question, "Who needs what, as defined by whom?"

Utility

An item of information can be said to have utility if it used by an information user in decision-making. Utility is ascribed by the information user. Needs Analysis Methodology aspires to maximize the utility of the information it provides. To do this, a needs analysis inquiry must incorporate several concepts related to utility: "focus," "requisite specificity," "requisite quality," and "acceptability." These concepts will be discussed next.

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*In fact until recently, Needs Analysis Methodology used the term "Decision-maker" rather than "Information User." The change was made in order to eliminate the hierarchical power connotations of "Decision-maker."

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Focus

If useful information is to be provided, the inquiry must respond to the foci of the information user's concerns in terms of "who needs what, as defined by whom." The information user identifies the people (needers) whose needs he is concerned about meeting. The information user identifies the types of need that he is concerned about meeting. The information user identifies the sources (i.e., the definers) of the definitions of need that are to be used in the inquiry. Finally the information user decides which combination of needer, type of need, and definer should be looked into first; which one, second; and so on. This provides the needs analyst with a prioritized set of foci for the inquiry.

Requisite specifity

Not only must the inquiry be focused on the information user's concerns, it must provide definitions of needs which are specific enough for the information user's purposes. If the user's purposes include measuring the extent to which needs are fulfilled then the definitions have to be stated in measurable terms. That would mean the definition would have to be stated in terms of observable behaviors or states, rather than in terms of "fuzzy" concepts. On the other hand, if the information user's purposes did not require such specificity, then resources should not be wasted in achieving it.

The concepts of focus and specificity provide limits on the generalizability which must be achieved in the needs inquiry. For this reason, the methods of needs analysis may differ from those which would be required for "conclusion-oriented research" (Cronbach and Suppes, 1969; Kaufman, 1972).

Requisite quality

The requirements of focus and specificity do not obviate the need for good quality in the conventional sense of the term. A decision-oriented methodology must provide for reliability and validity to the maximum feasible extent within the available resources. The needs analyst, moreover, is obligated to inform the information user of all identifiable limits to reliability and validity in order that the information user can determine whether he should ascribe utility to the information.

Acceptability

In the final analysis, if the information is to be used the information user must find not only that the information meets the criteria of focus, specificity, and quality, but also that the process is acceptable to him. If the user is unwilling to accept the process, he is unlikely to accept the data for purposes of his decision-making. This implies that the needs analyst must have the information user make certain decisions at several stages in the process in order to assure acceptability of both information and process.

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A final concept to be mentioned suggests that needs analysis must be a dynamic, adaptive process.

Adaptation

Information users change, their concerns change, needs change, need fulfillment changes, priorities change, resources change. A methodology must provide for adaptation to changes in values, priorities, resources, people, the passage of time, and so on.

At the very least, therefore, Needs Analysis Methodology has to provide for revision of needs inquiries and the reiteration of procedures. This is important not only for correcting what does not work well, but also for keeping up with the changing requirements for information. Typically, the requirements for revision and reiteration increase with the size and complexity of the scope of inquiry.

Next, the paper turns to the general design of Needs Analysis Methodology.

II. THE GENERAL DESIGN

Part I of the paper indicated some of the concepts which have most prominently guided the development of Needs Analysis Methodology to date. The purpose of Part II is to present the general framework or design of the methodology. Methodology is defined as a systematic, operationalized, standard set of rules and procedures for the accomplishment of a defined purpose. The purpose of Needs Analysis Methodology is "to provide useful information about needs." That purpose can be further defined in terms of five sub-purposes, which in this paper will serve as headings for discussing the general design of the methodology. The five sub-purposes are:

- -- To manage the process
- -- To specify the basic scope and priorities
- -- To identify the information users' concerns
- -- To obtain and report definitions of needs
- -- To obtain and report measurements of need fulfillment

These five sub-purposes imply the basic elements of the methodology.

Managing the Process

Management can be defined a number of ways, depending on one' purpose. In Needs Analysis Methodology, managing the process means the needs analyst performs certain functions that are necessary for (a) getting ready to implement the methodology, (b) planning and scheduling in detail the application of procedures, (c) solving problems which arise in the course of

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implementation, (d) evaluating the usefulness of the information that is provided, and (e) revising the applications in order to improve the utility of the needs analysis and to remain focused on the most important (and perhaps changing) data concerns of the intended users of information.

The most fully documented version of the methodology is described in A Needs Analysis Methodology for Education of the Handicapped -- Version I (Coffing, Hodson and Hutchinson, 1973). In that version the functions implicit in managing the process are implemented in the following four sets of procedures:

1.0 Preparation.
3.0 Planning.
9.0 Evaluation of Needs Analysis
10.0 Revising.

The next sub-purpose -- specifying the basic scope and priorities -- provides the basic linkage between the needs analysis process and other parts of the organizational system that is to be served.

Specifying the basic scope and priorities

Who should be served by needs analysis? What resources are available for serving them? Under most real conditions, it would be impossible to provide all the information that all the potential information users might require for their decision-making. Therefore, somebody has to designate specifically which information users are to be served by the needs analysis.

Moreover, because needs analysis consumes resources -- money, time, talent, and so on -- it is important that someone specify what kinds and amounts of resources are actually available for conducting needs analysis and what constraints govern the employment of those resources. The available resources must then be matched to the designated information users according to some set of priorities, thus establishing the basic scope and priorities by which the needs analysis is to be carried out.

In Needs Analysis Methodology, the needs analyst, as such, does not specify the basic scope and priorities. Rather, they are specified by the person or group which has principal control of the resources that are available. The people who specify the basic scope and priorities are called "Contract Decision-makers," because the problem is one of establishing a form of contract, whether formal or informal, between the needs analyst and the persons who are to be served.

In A Needs Analysis Methodology for Education of the Handicapped -- Version I, specifying the basic scope and priorities is accomplished with the following set of procedures:

2.0 Contract Negotiation.

Identifying Information Users' Concerns

If the data are to have utility, the inquiry must be focused on the concerns of the information user, as identified by the information user. In Needs Analysis Methodology, those concerns are framed in terms of the question "Who needs what, as defined by whom?"

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The information user first is asked for a list of the individuals, groups or categories of persons (needers) whose needs the information user is concerned about meeting. Second, the information user is asked for a list of the types of needs which the information user is concerned about meeting. Third, the information user is asked for a list of the individuals, groups or categories of persons (definers) who can best define the listed needs of the listed needers. Usually these lists are "tested for completeness" by providing the information user with additional perspectives from other persons known to the information user and from relevant literature, if any.

Then the lists are combined by the information user according to the user's priorities for having information. The result is a prioritized list of phrases in the form, "who needs what, as defined by whom." Some hypothetical examples are:

Priority	
1	"Our students' needs for career education, as defined by the students, themselves"
2	"Our students' needs for career education, as defined by their parents"
3	"Our teachers' needs for professional growth as defined by the teachers, themselves."
4	"Parents' needs for information about our schools, as defined by the parents, themselves."
5	"Our administrators' needs for educational information as defined by the administrators, themselves."

Identifying the information user's concerns rarely results in only one phrase of concern. Whenever more than one concern is identified, the information user must prioritize the list of concerns so that the inquiry can be directed toward providing the most important or the most urgent or the most timely information first.

In A Needs Analysis Methodology for Education of the Handicapped -- Version I, the identification of information users' concerns is accomplished in:

4.0 Determination of Who-What-Whom Concerns

Obtaining and Reporting Definitions of Needs

To name a need is to partially define it. But only partially. Identifying a combination of needer and need does little more than "target" one's attention. What becomes critical is the specification of the needer's need. What is its operational definition? What behaviors and/or states comprise the needer's need? The specifics of the need constitute the criteria by which need fulfillment must be measured, if it is to be measured at all.

Because need is a concept of some desired status or set of conditions, someone has to specify the attributes of the desired status. From the definers who have been designated for this purpose by the information user, the needs analyst has to obtain and report their definitions. Some definers' definitions may be available through analysis of their publications, if any. Other definers' definitions are obtained by

direct contact -- by interview or survey. Direct contact may be enhanced by supplying the definers with analyses of relevant literature.

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The definitional problem is essentially one of obtaining an explicit description of what the definers imagine would be present or would be happening if the needer's need were completely fulfilled. The definers thus describe as specifically as possible "what should be."

When the source is literature rather than personal contact, the needs analyst typically has to answer the question, "How does the author describe what would exist if the need were fulfilled?" When the contact is personal the needs analyst typically asks the definer to "Imagine that (the needer)'s need for (the type of need) is completely fulfilled. As you think about that situation, what are the things you visualize that indicate to you that the need is being fulfilled?"

In a needs analysis where the definer is in fact a group of persons, then a second-round survey instrument is administered so that all the definers can select the attributes from among all the first-round responses. When the definer group is quite large, multiple instruments are used with appropriate sampling techniques. More than two rounds are sometimes necessary to achieve the requisite level of specificity.

The definers prioritize the components of the definition of the need. The prioritized components are then reported to the information user.

Obtaining and Reporting Definitions of Needs is accomplished with the following sets of procedures in A Needs Analysis Methodology for Education of the Handicapped -- Version I:

5.0 Defining

6.0 Definition Reporting

Obtaining and Reporting Measurements of Need Fulfillment

There is considerable agreement in the literature of needs assessment that to know "what should be" is not to know enough. Information users often (but not always) want to know how well the defined needs are being met -- either currently or as projected into some future period. Thus a methodology for providing useful information about needs must include procedures for measuring the status of need fulfillment.

When measurement is required, it is done in terms of the defined need. That is, the definition of need provides the criteria for observing need fulfillment.

In Needs Analysis Methodology, measurement is not done automatically. First, the needs analyst determines whether resources are available to carry out any measurement on behalf of the information user. If some resources are available, then the needs analyst asks the information user to say for which defined needs he wants to know the current status.

If an information user doesn't want measurement done for certain needs or attributes it may be because of the definition. Seeing the

definition in detail, the information user may find it is not important or useful. But there may be another reason. Often an information user finds that the specific definition of the needer's need makes the current status obvious. Once the need is defined, in other words, the information user can organize his own knowledge and available data about the extent of need fulfillment.

When measurement is desired and resources are available, then a measurement plan is developed and implemented with the approval of the information user. An appropriate plan may involve simply the collecting of status data already in existence. It may involve gathering new data by the implementation of existing observational techniques. It may involve the implementation of new observational techniques, tailor-made for this inquiry.

Within the available resources, the plan must attempt to maximize the quality of the information in terms of reliability and validity. The information user's approval of the plan helps to assure that utility will be ascribed to the resulting information.

The information is reported to the information user in a format and on a schedule as close as possible to the information user's preferences. Depending on the scope of the inquiry for the particular information user, there may be only one report or there may be many, spread over a period of time.

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In A Needs Analysis Methodology for Education of the Handicapped -- Version I, measurements are obtained and reported in the following sets of procedures:

7.0 Measuring

8.0 Measurement Reporting

Figure 2 shows the relationship between the five sub-purposes which have been described and the ten sub-sets of procedures which have been identified, but not fully defined, in this paper.

Needs Analysis Methodology is being developed for use under a variety of circumstances. Accordingly the full set of rules and procedures will be more comprehensive than necessary for any single application of the methodology. Draft I contains only 34 steps requiring two typewritten pages (Appendix A). But Version I of "A Needs Analysis Methodology for Education of the Handicapped" contains hundreds of steps, including many alternatives; and it covers 99 typewritten pages (Coffing, Hodson and Hutchinson, 1973), in addition to considerable explanatory material. Because of the length of the latter version, some simplified flow charts have been included as Appendix B. Appendix C is a scenario written around the five sub-purposes, illustrating how the methodology might be applied in a hypothetical national needs analysis design (see also Coffing, Thomann, Mattson and Merriman, 1974). Appendix D is a workbook for use in implementing Needs Analysis Methodology under relatively simple circumstances.

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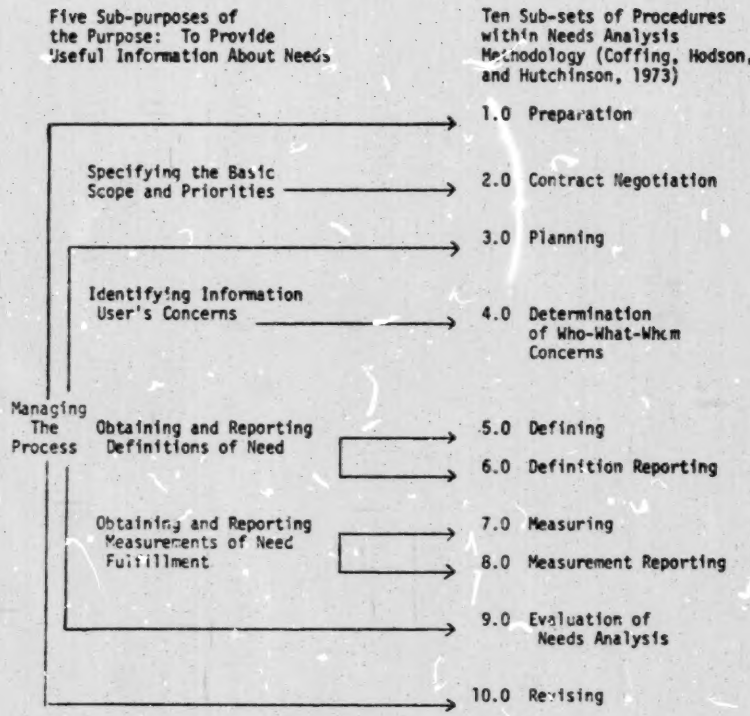
Five Sub-purposes of the Purpose: To Provide Useful Information About Needs
Ten Sub-sets of Procedures within Needs Analysis Methodology (Coffing, Hodson, and Hutchinson, 1973)
1.0 Preparation
Specifying the Basic Scope and Priorities
2.0 Contract Negotiation
3.0 Planning
Identifying Information User's Concerns
4.0 Determination of Who-What-When Concerns
Managing The Process
Obtaining and Reporting Definitions of Need
5.0 Defining
6.0 Definition Reporting
Obtaining and Reporting Measurements of Need Fulfillment
7.0 Measuring
8.0 Measurement Reporting
9.0 Evaluation of Needs Analysis
10.0 Revising

Figure 2. Sets of Purposes and Procedures within Needs Analysis Methodology

Athough it is not finished, Needs Analysis Methodology has been implemented, or is being implemented partially in at least the following studies:

-- a college-level curriculum re-design based on teachers' and parents' needs for competencies

-- an analysis of a community's needs for alternative programs at the high school level

-- a regional analysis of vocational education needs of school-age handicapped children population.

-- development of a counseling program in the arts for gifted students

-- development of a multi-year plan for special education programming in a consortium of seven school systems

-- a city school system's needs for re-programming due to deseggregation

-- a regional analysis of school administrators' needs for information

This paper perhaps can conclude most appropriately with a request: the authors and their co-workers would like to have from the readers their comments and criticism of any kind. Clearly, such feedback can enhance greatly the further development of methodology for identifying, defining, and measuring people's needs.

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APPENDIX A

The Coffing-Hutchinson Needs Analysis Methodology
Draft I

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1. Identify the persons for whose decision-making the needs analysis will be performed.
2. Prioritize these persons.
3. Determine the amount of resources available for the design and conduct of the needs analysis.
4. Allocate the resources among the persons according to the priorities.
5. For the next most important decision maker, have him identify the categories of persons whose needs are important to the decision maker.
6. Test this list for completeness.
7. Have the decision maker identify the broad categories of need that are important to the decision maker.
8. Test this list for completeness.
9. Have the decision maker identify the categories of persons who should specify the needs to an operational level.
10. Test this list for completeness.
11. Using the three lists, generate all possible questions in the form: whose (list 1) needs for what (list 2) according to whom (list 3).
12. Have the decision maker remove from the list those questions in which he has no interest.
13. Have the decision maker prioritize the remaining questions.
14. If there are more decision makers for whom steps 6 to 13 have not been performed, go to step 5.
15. Allocate the remaining design resources among the sentences given the priorities among decision makers and the priorities within decision maker's list of sentences.
16. If some of the sentences fit the pattern: the clients' needs for what according to the clients, see Coffing's Client Demand Analysis Methodology.
17. Take the next most important question in the form whose needs for what according to whom (A's needs for B according to C).

18. Determine the sample size of C to be used.
19. Ask each member of the sample the following question: What are A's needs for B?
20. Assemble the results and show additional samples from C.
21. Use these samples to bring all elements of the items identified to an operational level.
22. Assemble all of the operational elements of B into a survey instrument with directions as follows: Check off from the list below all items that you believe A needs.
23. Administer the survey instrument to a sample of C.
24. Accumulate the results of the survey by finding for each item the percent of the sample that chose the item as a need of A.
25. Report on the survey results to the decision maker.
26. Take the item of the survey that obtained the (next) highest percentage and design an instrument to measure the extent to which A has this need unfulfilled.
27. Draw a sample of A and administer the instrument (this may be postponed until more instruments are developed).
28. Assemble the data and report to the decision maker.
29. If resources allow and there are still items on the results of the survey of step 24, then go to step 26.
30. If resources allow and there are still sentences that remain on the list from step 15, then go to step 17.
31. If a decision maker identifies for the same "whose" as defined by more than one "whom" then have the decision maker consider whether he wants to combine the results. If not, got to step 33.
32. Determine what weighting system and scheme of combining results is most appropriate to the decision maker. Perform the combining and give him the results.
33. Evaluate whether or not the data produced is actually used for decision making.
34. If there is to be more work done in needs analysis, return to step 1. If not, you're done.

APPENDIX B

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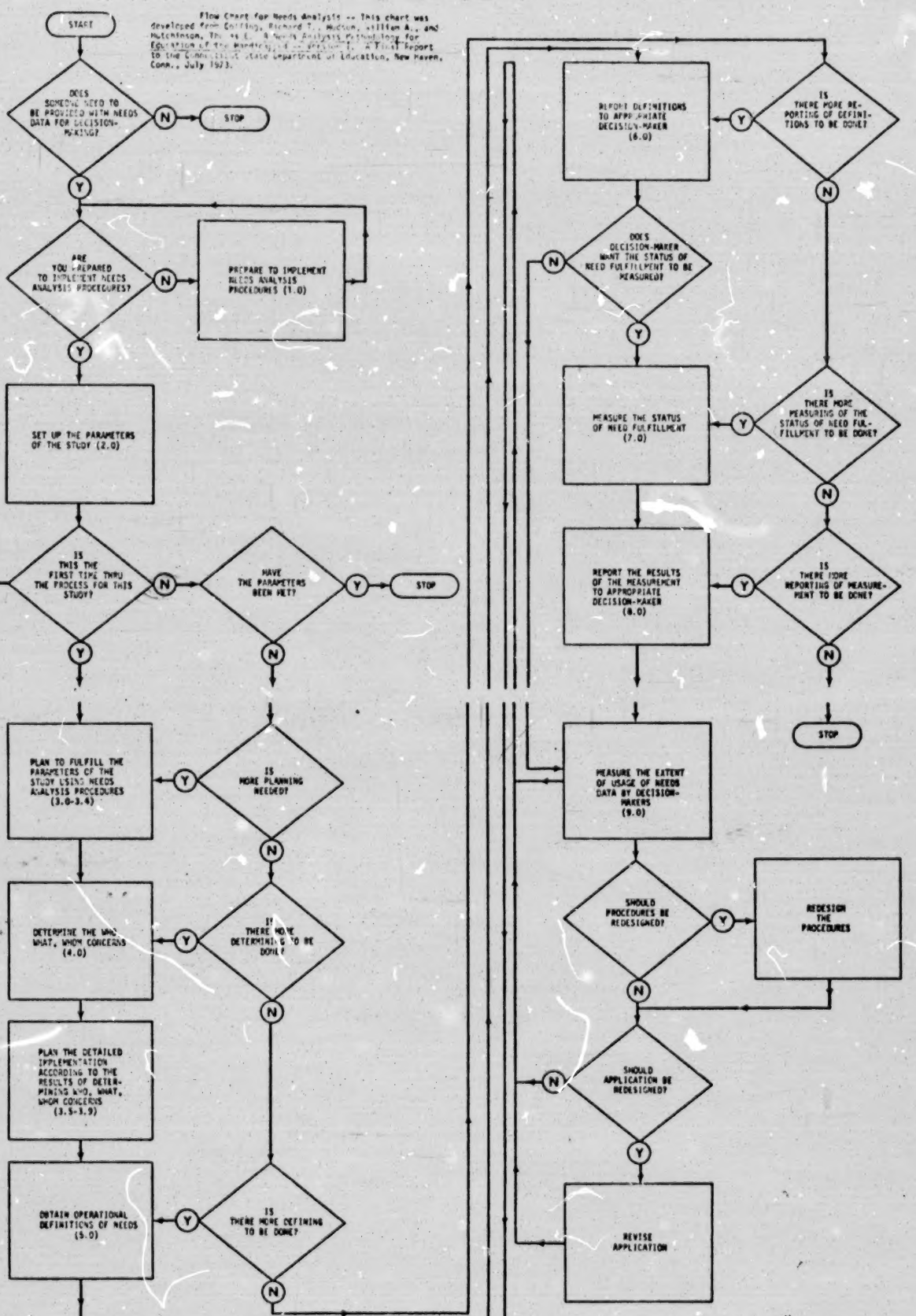
START
DOES SOMEONE NEED TO BE PROVIDED WITH NEEDS DATA FOR DECISION-MAKING?
N
STOP
Y
ARE YOU PREPARED TO IMPLEMENT NEEDS ANALYSIS PROCEDURES?
N
PREPARE TO IMPLEMENT NEEDS ANALYSIS PROCEDURES (1.0)
Y
SET UP THE PARAMETERS OF THE STUDY (2.0)
IS THIS THE FIRST TIME THRU THE PROCESS FOR THIS STUDY?
N
HAVE THE PARAMETERS BEEN MET?
Y
STOP
Y
N
PLAN TO FULFILL THE PARAMETERS OF THE STUDY USING NEEDS ANALYSIS PROCEDURES (3.0-3.4)
IS MORE PLANNING NEEDED?
Y
N
DETERMINE THE WHO, WHAT, WHOM CONCERNS (4.0)
IS THERE MORE DETERMINING TO BE DONE?
Y
N
PLAN THE DETAILED IMPLEMENTATION ACCORDING TO THE RESULTS OF DETERMINING WHO, WHAT, WHOM CONCERNS (3.5-3.9)
OBTAIN OPERATIONAL DEFINITIONS OF NEEDS (5.0)
IS THERE MORE DEFINING TO BE DONE?
Y
N
REPORT DEFINITIONS TO APPROPRIATE DECISION-MAKER (6.0)
IS THERE MORE REPORTING OF DEFINITIONS TO BE DONE?
Y
N
DOES DECISION-MAKER WANT THE STATUS OF NEED FULFILLMENT TO BE MEASURED?
N
Y
MEASURE THE STATUS OF NEED FULFILLMENT (7.0)
IS THERE MORE MEASURING OF THE STATUS OF NEED FULFILLMENT TO BE DONE?
Y
N
REPORT THE RESULTS OF THE MEASUREMENT TO APPROPRIATE DECISION-MAKER (8.0)
IS THERE MORE REPORTING OF MEASUREMENT TO BE DONE?
Y
N
STOP
MEASURE THE EXTENT OF USAGE OF NEEDS DATA BY DECISION-MAKERS (9.0)
SHOULD PROCEDURES BE REDESIGNED?
Y
REDESIGN THE PROCEDURES
N
SHOULD APPLICATION BE REDESIGNED?
N
Y
REVISE APPLICATION

Flow Chart for Needs Analysis -- This chart was developed from Coffing, Richard T., Hudson, William A., and Hutchinson, Thomas E. A Needs Analysis Procedure for Education of the Handicapped -- Phase I. A Final Report to the Connecticut State Department of Education, New Haven, Conn., July 1973.

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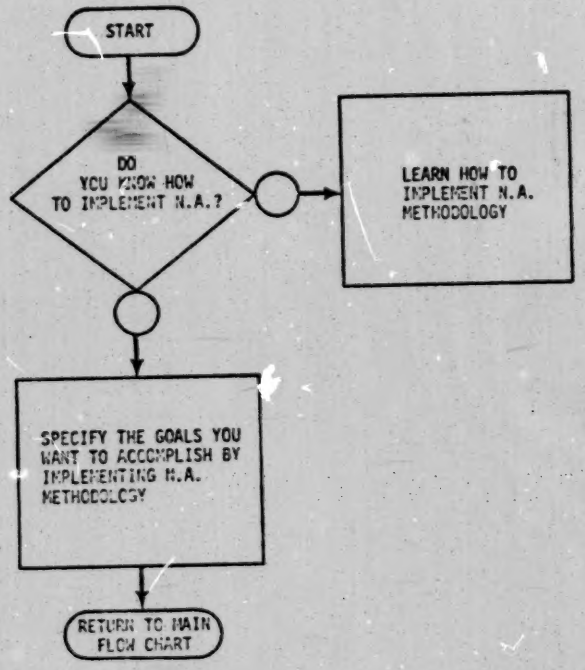
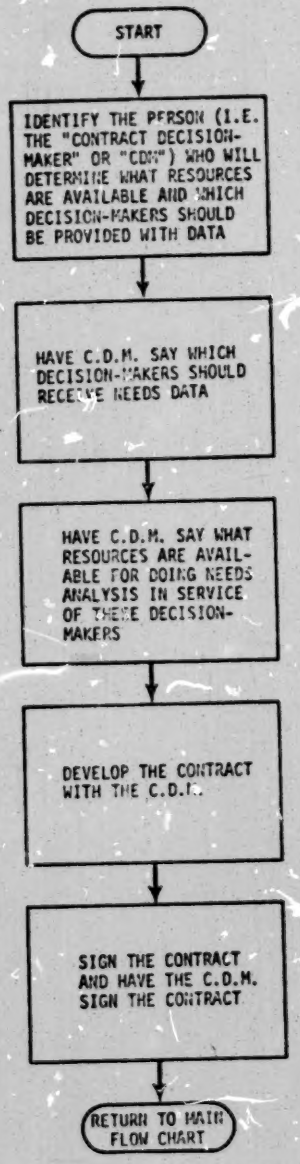
Flow Chart for Preparing to Implement N.A. Methodology (1.0)


START
DO YOU KNOW HOW TO IMPLEMENT N.A.?
LEARN HOW TO IMPLEMENT N.A. METHODOLOGY
SPECIFY THE GOALS YOU WANT TO ACCOMPLISH BY IMPLEMENTING N.A. METHODOLOGY
RETURN TO MAIN FLOW CHART

Flow Chart for Setting Up the Parameters of the Study (2.0)


START
IDENTIFY THE PERSON (I.E. THE "CONTRACT DECISION-MAKER" OR "CDM") WHO WILL DETERMINE WHAT RESOURCES ARE AVAILABLE AND WHICH DECISION-MAKERS SHOULD BE PROVIDED WITH DATA
HAVE C.D.M. SAY WHICH DECISION-MAKERS SHOULD RECEIVE NEEDS DATA
HAVE C.D.M. SAY WHAT RESOURCES ARE AVAILABLE FOR DOING NEEDS ANALYSIS IN SERVICE OF THESE DECISION-MAKERS
DEVELOP THE CONTRACT WITH THE C.D.M.
SIGN THE CONTRACT AND HAVE THE C.D.M. SIGN THE CONTRACT
RETURN TO MAIN FLOW CHART

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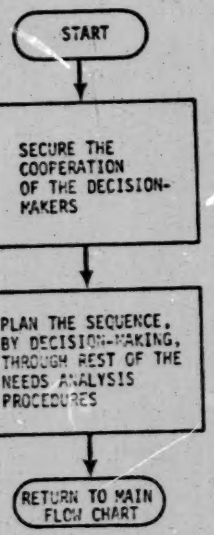
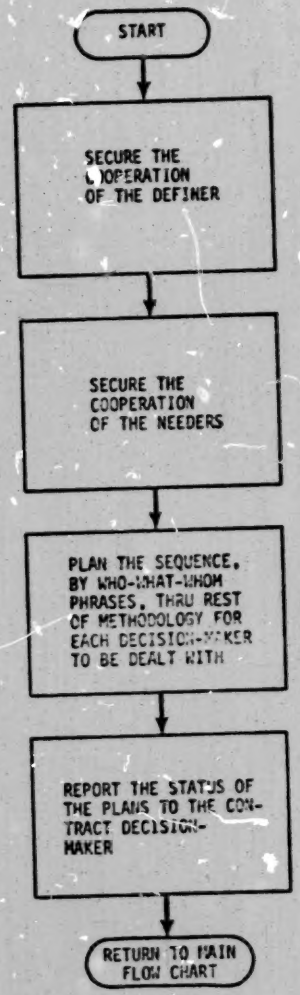
Flow Chart for Planning the Fulfillment of Contract (3.0-3.4)


START
SECURE THE COOPERATION OF THE DECISION-MAKERS
PLAN THE SEQUENCE, BY DECISION-MAKING, THROUGH REST OF THE NEEDS ANALYSIS PROCEDURES
RETURN TO MAIN FLOW CHART

Flow Chart for Planning the Detailed Implementation of N.A.M. (3.5-3.9)


START
SECURE THE COOPERATION OF THE DEFINER
SECURE THE COOPERATION OF THE NEEDERS
PLAN THE SEQUENCE, BY WHO-WHAT-WHOM PHRASES, THRU REST OF METHODOLOGY FOR EACH DECISION-MAKER TO BE DEALT WITH
REPORT THE STATUS OF THE PLANS TO THE CONTRACT DECISION-MAKER
RETURN TO MAIN FLOW CHART

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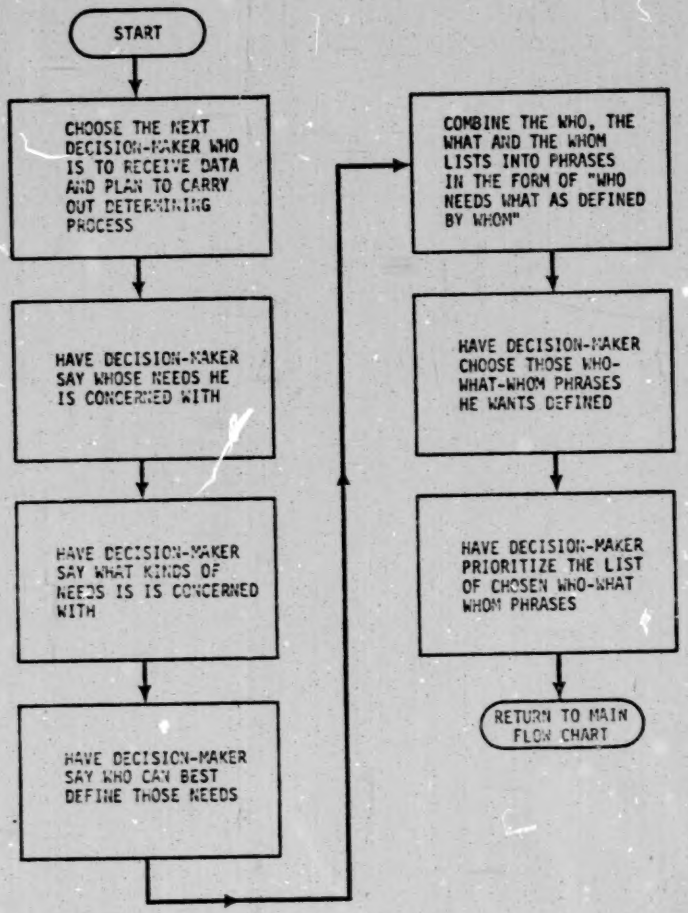
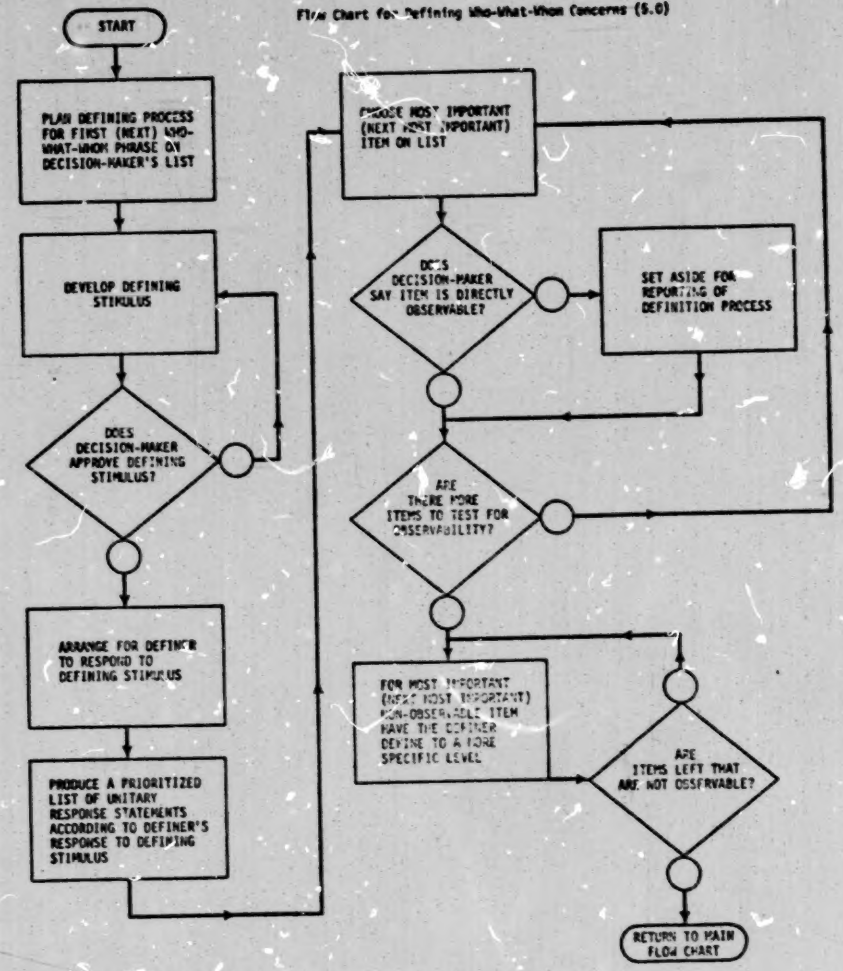
Flow Chart for Determining Who-What-Whom Concerns (4.0)


START
CHOOSE THE NEXT DECISION-MAKER WHO IS TO RECEIVE DATA AND PLAN TO CARRY OUT DETERMINING PROCESS
HAVE DECISION-MAKER SAY WHOSE NEEDS HE IS CONCERNED WITH
HAVE DECISION-MAKER SAY WHAT KINDS OF NEEDS IS IS CONCERNED WITH
HAVE DECISION-MAKER SAY WHO CAN BEST DEFINE THOSE NEEDS
COMBINE THE WHO, THE WHAT AND THE WHOM LISTS INTO PHRASES IN THE FORM OF "WHO NEEDS WHAT AS DEFINED BY WHOM"
HAVE DECISION-MAKER CHOOSE THOSE WHO-WHAT-WHOM PHRASES HE WANTS DEFINED
HAVE DECISION-MAKER PRIORITIZE THE LIST OF CHOSEN WHO-WHAT WHOM PHRASES
RETURN TO MAIN FLOW CHART

Flow Chart for Defining Who-What-Whom Concerns (5.0)


START
PLAN DEFINING PROCESS FOR FIRST (NEXT) WHO-WHAT-WHOM PHRASE ON DECISION-MAKER'S LIST
DEVELOP DEFINING STIMULUS
DOES DECISION-MAKER APPROVE DEFINING STIMULUS?
ARRANGE FOR DEFINER TO RESPOND TO DEFINING STIMULUS
PRODUCE A PRIORITIZED LIST OF UNITARY RESPONSE STATEMENTS ACCORDING TO DEFINER'S RESPONSE TO DEFINING STIMULUS
CHOOSE MOST IMPORTANT (NEXT MOST IMPORTANT) ITEM ON LIST
DOES DECISION-MAKER SAY ITEM IS DIRECTLY OBSERVABLE?
SET ASIDE FOR REPORTING OF DEFINITION PROCESS
ARE THERE MORE ITEMS TO TEST FOR OBSERVABILITY?
FOR MOST IMPORTANT (NEXT MOST IMPORTANT) NON-OBSERVABLE ITEM HAVE THE DEFINER DEFINE TO A MORE SPECIFIC LEVEL
ARE ITEMS LEFT THAT ARE NOT OBSERVABLE?
RETURN TO MAIN FLOW CHART

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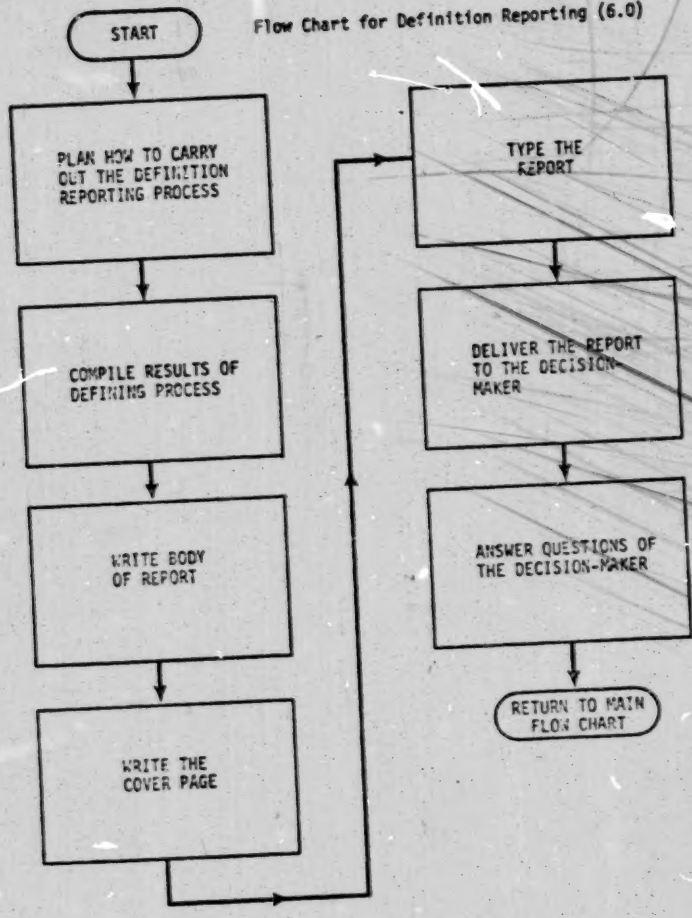
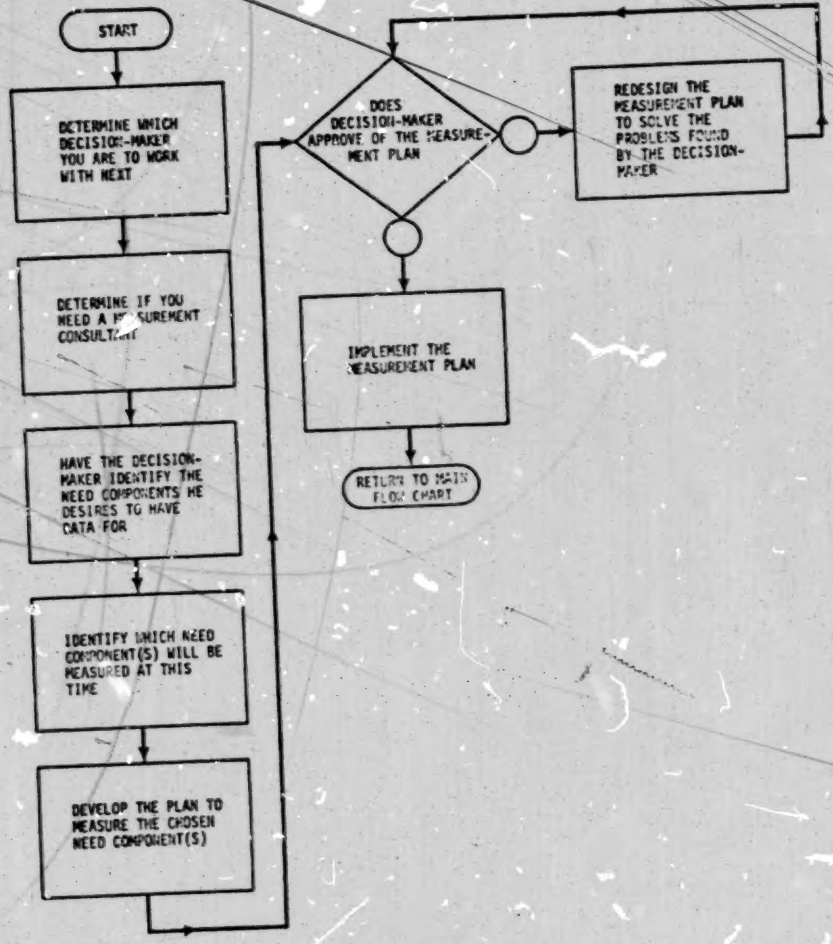
Flow Chart for Definition Reporting (6.0)


START
PLAN HOW TO CARRY OUT THE DEFINITION REPORTING PROCESS
COMPILE RESULTS OF DEFINING PROCESS
WRITE BODY OF REPORT
WRITE THE COVER PAGE
TYPE THE REPORT
DELIVER THE REPORT TO THE DECISION-MAKER
ANSWER QUESTIONS OF THE DECISION-MAKER
RETURN TO MAIN FLOW CHART

Flow Chart for Measuring Status of Need Fulfillment (7.0)


START
DETERMINE WHICH DECISION-MAKER YOU ARE TO WORK WITH NEXT
DETERMINE IF YOU NEED A MEASUREMENT CONSULTANT
HAVE THE DECISION-MAKER IDENTIFY THE NEED COMPONENTS HE DESIRES TO HAVE DATA FOR
IDENTIFY WHICH NEED COMPONENT(S) WILL BE MEASURED AT THIS TIME
DEVELOP THE PLAN TO MEASURE THE CHOSEN NEED COMPONENT(S)
DOES DECISION-MAKER APPROVE OF THE MEASUREMENT PLAN
REDESIGN THE MEASUREMENT PLAN TO SOLVE THE PROBLEMS FOUND BY THE DECISION-MAKER
IMPLEMENT THE MEASUREMENT PLAN
RETURN TO MAIN FLOW CHART

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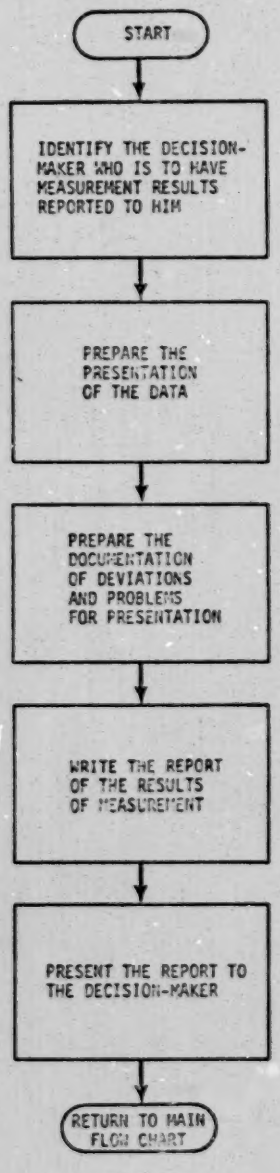
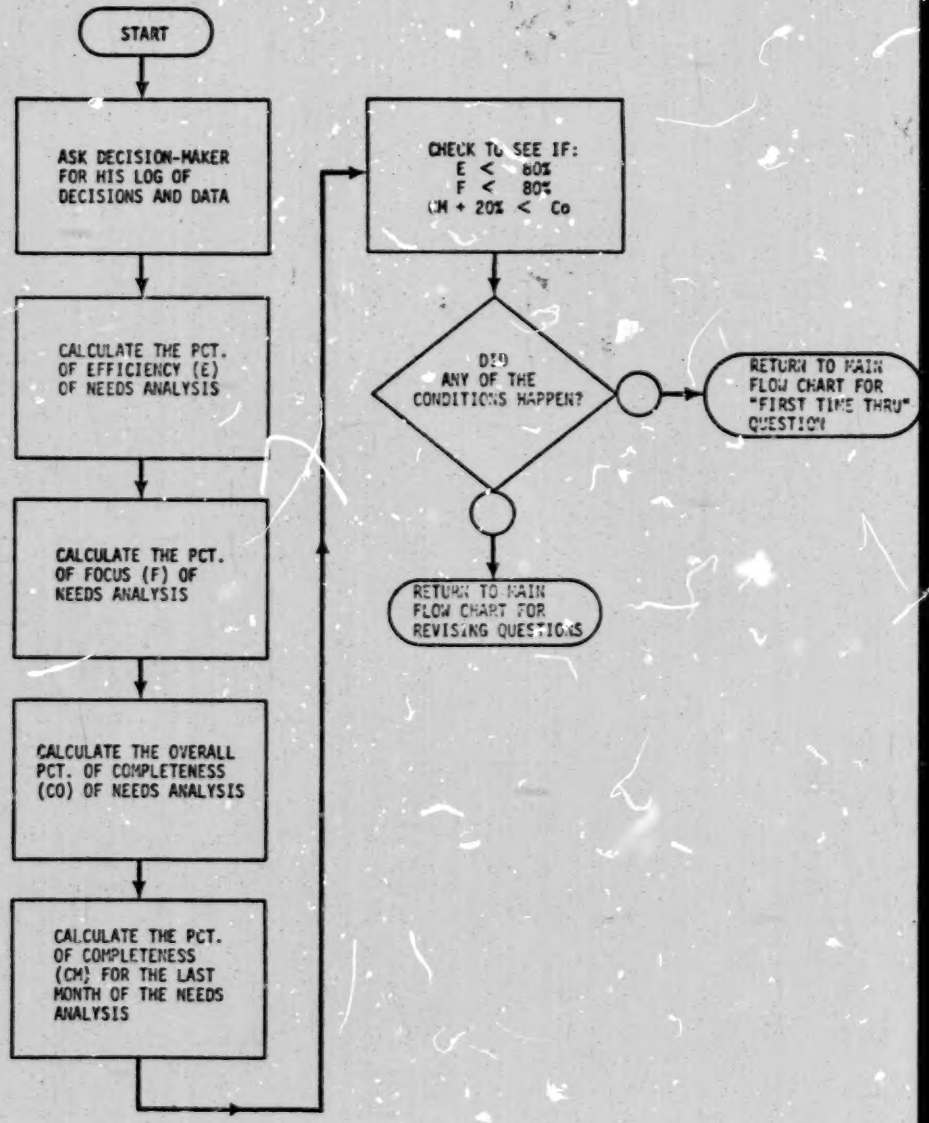
Flow Chart for Reporting Results of Measurement Process (8.0)


START
IDENTIFY THE DECISION-MAKER WHO IS TO HAVE MEASUREMENT RESULTS REPORTED TO HIM
PREPARE THE PRESENTATION OF THE DATA
PREPARE THE DOCUMENTATION OF DEVIATIONS AND PROBLEMS FOR PRESENTATION
WRITE THE REPORT OF THE RESULTS OF MEASUREMENT
PRESENT THE REPORT TO THE DECISION-MAKER
RETURN TO MAIN FLOW CHART

Flow Chart for Measuring Extent of Usage of Needs Data (9.0)


START
ASK DECISION-MAKER FOR HIS LOG OF DECISIONS AND DATA
CALCULATE THE PCT. OF EFFICIENCY (E) OF NEEDS ANALYSIS
CALCULATE THE PCT. OF FOCUS (F) OF NEEDS ANALYSIS
CALCULATE THE OVERALL PCT. OF COMPLETENESS (CO) OF NEEDS ANALYSIS
CALCULATE THE PCT. OF COMPLETENESS (CM) FOR THE LAST MONTH OF THE NEEDS ANALYSIS
CHECK TO SEE IF:
E < 60%
F < 80%
CM + 20% < Co
DID ANY OF THE CONDITIONS HAPPEN?
RETURN TO MAIN FLOW CHART FOR "FIRST TIME THRU" QUESTION
RETURN TO MAIN FLOW CHART FOR REVISING QUESTIONS

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APPENDIX C

SCENARIO I: A HYPOTHETICAL APPLICATION OF THE NATIONAL NEEDS ANALYSIS DESIGN FOR SPECIAL EDUCATION MATERIALS

Richard T. Coffing, Ed.D.
Ingo Kalfitz, Ph.D.

February, 1974

By themselves, the detailed strategies of the NCEMMH* National Needs Analysis Design (Coffing et al, 1974) cannot call to the reader's mind the outcomes which can be expected from certain parts of the Design. To enhance the reader's understanding, therefore, this brief scenario has been prepared with the assistance of some people who develop materials for use with trainable mentally retarded children.

The scenario describes hypothetically how a needs analyst has implemented three basic steps in the Design: (1) Identifying Information Users' Concerns for Information about Needs, (2) Obtaining and Reporting Definitions of Needs, and (3) Obtaining and Reporting Measurement of Need Fulfillment. Several decisions have preceeded the needs analyst's activity in this scenario:

-- With the widest feasible advice from appropriate persons in education, government, business and voluntary agencies serving the handicapped, it has been decided that a high priority group of people to be provided with information about needs are the staffs of existing instructional materials development projects that are funded by the Bureau of Education for the Handicapped, U. S. Office of Education.

-- One of the information users that is supposed to get some information about needs early in the National Needs Analysis is the staff of the "Daily Living Skills Project" in Denver, Colorado. This project is developing instructional materials for the training of trainable mentally retarded individuals.

-- The Daily Living Skills (DLS) Project staff have been contacted by the National Needs Analysis staff as to (a) their willingness to participate and (b) the availability of their time and other resources necessary to supplement National Needs Analysis resources.

A. Identifying Information Users' Concerns. Once the priorities for the National Needs Analysis had been determined at a point in time, one of the needs analysts contacted the Director of the Daily Living Skills Project and arranged for a one day meeting at the project office in Denver. Included in this meeting were the Director and Assistant Director of the Project, as well as several of the Instructional Developers.

Prior to the day of the meeting, the needs analyst sent to the project a five page description of the purpose and basic design for the National Needs Analysis Project of NCEMMH. This material described certain portions of the mission of the National Center and also provided information about the National Needs Analysis.

In Denver, at the beginning of the meeting, the needs analyst orally summarized the purpose and design of the project and answered

*The National Center on Educational Media and Materials for the Handicapped, The Ohio State University, 220 West 12th Avenue, Columbus, Ohio 43210. The NCEMMH is funded by the Bureau of Education for the Handicapped, U. S. Office of Education.

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questions about the design. The DLS Director had previously sent the needs analyst some materials that described the purpose and nature of the DLS Project, and the needs analyst asked some questions about the DLS Project in order to expand her understanding.

She first asked the individual staff members to say something about their roles on the project in order to cause them to focus on their decision-making responsibilities within the project. She then asked the staff to identify decisions that they make with respect to development of instructional materials. For purposes of the scenario, not all of the decisions that the staff listed will be included here, but some of them were:

1. Decide what needs should be addressed.
2. Decide what sub-components of certain needs should be addressed by special programs.
3. Decide what sub-components should have priority over other sub-components, since certain behaviors may be more generally needed than others.
4. Determine a sequence for development of training programs.
5. Decide whether there are available resources and time.
6. Decide how much effort -- time and resources -- should go into program design, development and dissemination.
7. Determine the content of individual training programs.
8. Decide on the task breakdown to be prescribed for the children.
9. Determine prerequisite skills, age range and physical and behavioral characteristics of potential recipients of program application within the target population.

10. Determine the procedures that are to be used by the teachers in training the children in each program.

Then the needs analyst asked the staff to identify decisions about media and materials that they might want to make in the future. The staff indicated that in the future they would make the same kinds of decisions as above, plus the following:

11. What additional programs should be developed in the future, given the reality based restrictions of federal funding?

In the course of naming the decisions they either made or wanted to make, one of the staff members mentioned that the staff did already have some information about needs that they had been using in making some decisions. Therefore the needs analyst next asked, "What kinds of information about needs do you have available to you?" Staff members replied that they have available to them a few sources beyond their own personal experiences in training these children. These sources suggest and indicate information about needs as compiled by researchers, curriculum specialists and other professionals in the field of mental retardation and related fields. Written sources of information include the following:

-- Residential Programming for Mentally Retarded Persons
-- Cain Levine Social Competency Scale
-- Nebraska Client Process System
-- Adaptive Behavior Checklist
-- Vineland Social Maturity Scale
-- Kansas Neurological Institute Development Checklist

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In listing these sources of information, the needs analyst took note of some gratuitous comments by the staff that these sources varied in format and varied in audiences, and that the sources were not entirely adequate for the development of specific materials to meet needs. The needs analyst decided not to examine that issue further at this point, but rather asked another question of the staff.

The question that the needs analyst asked was, "With respect to your decisions and roles here in the DLS Project, whose needs are you concerned about meeting?" Answers to this questions began the formulation of the basic needs analysis phrase: "Who needs what, as defined by whom." One of the staff members said that the target population for the project was "trainers of the severely or moderately retarded." Another staff person added the explanation that "severely or moderately retarded" referred to what might otherwise be called the category of "trainable mentally retarded." The project was using two of the categories designated by the American Association of Mental Deficiency. The staff, however, added that they were concerned about meeting the needs of severely or moderately retarded students, and in that sense the students were the target population. However, the project's products would be put in the hands of teachers in order to modify teacher behavior. Hopefully, the teachers would then be able to modify the behavior of the students. The connection with students consequently was considered to be less direct by the project staff.

The needs analyst asked the staff to detail further the categories of people whose needs the staff is concerned about meeting. The staff's

list of "needers" was as follows (this is the partial list for purposes of the scenario):

- -- Severely or moderately retarded children
- -- Instructional staff, which is comprised of
  - (a) institutional aides
  - (b) teachers in the institutions
  - (c) direct care personnel
  - (d) other institutional staff
- -- Special Education teachers of the severely or moderately retarded
- -- Parents of the severely or moderately retarded

The project staff made it clear that the a, b, c and d categories were overlapping.

The next question was, "Again with respect to your decisions and roles in the DLS Project, what kinds of needs are you concerned about meeting?" The staff replied that the project was aimed at meeting needs for "systematic validated daily skill programs." This, they said, was the only important category of need that they wanted to be concerned about at this time. Since they expressed it that way, the needs analyst decided not to press further for other needs which they might also be concerned about meeting.

The following question related to focusing the staff's concerns for information about needs, "Who can define specifically those needs of those persons?"

Project DLS had been underway for more than a year and a half at the time the needs analyst first contacted them. In that period of time the staff of the project had already identified some forty pro-

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gram areas they felt should be given priority for development. The priorities were derived from reading literature available in the field, including the information sources that have been mentioned above. Nine training programs had already been completed in certain areas of personal cleanliness. These included programs on washing one's self, dressing in street clothes, brushing teeth, and shaving. Under contract with the Bureau of Education for the Handicapped, the project was committed to the development of certain additional programs. These included using restrooms, several programs in the care of simple injuries, several programs in using electronic communication devices such as telephones and television, following directions, asking for directions, handling certain medical emergencies, and listening to others. These program titles, in effect, respresented a further specification of the broad category of need which the staff had called "systematic daily living skill programs."

In response to the question of who could best define the children's needs for daily living skills and the trainer's needs for systematic programs relative to those skills, the staff identified the following potential definers:

-- Students
-- Teaching Aides
-- Training Directors
-- Parents
-- Courts
-- Parent Advocate Organizations
-- Joint Commission on Accreditation of Hospitals
-- Special Educators
-- Curriculum Specialists and other professionals

The staff indicated that deciding who should specify what the needs are had been a real problem for the project. Basically, the staff was concerned about getting needs defined by people who are directly responsible for the children. However, they felt that certain persons who have direct institutional contact with these children might define the needs too narrowly. That is, if an institution is not teaching a certain set of skills, then the institutional staff may not say those skills are needed. This would constitute a kind of justification of the status quo. Further, needs may be defined so ambiguously, so broadly, that the definition is nonfunctional -- such as in a situation where "coping with life" is indicated as a training need. With such an ambiguous need posture, specification, implementation and evaluation is impossible. Ideally, the DLS Project staff said, they would like to have the children themselves define the needs, but they said this would be practically impossible. The staff discussion centered around trying to identify some more "objective" definers of needs, and the consensus of the staff seemed to be that such persons would be people who are not now directly connected with either federal projects or institutions. (We all, as a matter of practical necessity and sometime expendiency, have some operational priorities. What we need, though, are some logical replicable, credible ways of representing them). Rather, the definers would be professional "advocates" for the children who could be identified through the assistance of advocate organizations such as the National Association for Retarded Children.

The needs analyst next asked the staff to put the list of needers into priority order according to "the importance of meeting their needs."

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At first the staff identified the institutional staff persons as the most important needers (for systematic programs on daily living skills); next were special education teachers; third were parents of severely or moderately retarded children. After considering that priority ranking a few minutes, however, the staff decided the highest priority would be the students even though the project was preparing materials for teachers and other persons to use. Then would come the three priority ordered adult groups.

The needs analyst next asked if the staff had a further breakdown of daily living skills. The staff referred to their list of program areas for which they had either produced programs or had proposed in their current contract to develop programs. The needs analyst asked the staff to say whether having information about needs for certain program areas was more important than for other program areas on the list. The staff said they had no real information on importance, and would find it difficult to rank order the kinds of needs (or programs) using a criterion of "importance," since all the skill (program) areas appear to be "important," according to the literature and the staff's own sense.

Given the staff's hestitation, the needs analyst asked them to consider the work schedule they had already developed for producing training programs, and decide for which program they first would want information about needs, for which one second, and so forth. In other words, the needs analyst asked the staff to choose a time sequence for obtaining information about needs, given whatever scheduling they are committed to by contract. In this way, the needs analyst was able

to begin working out a plan for gathering data that would be geared to usage of the information according to the project's work plan. In this sense, the needs analysis must fit the project's schedule, rather than the project fitting the needs analysis' schedule. Given the criterion of "temporal sequence," the staff said that they were most concerned about having needs information for the program area called "using the telephone." After that, they would want information about needs for "receiving and following simple directions;" then for "care of simple injuries."

After they had priority ordered the list of needs, the needs analyst asked the staff to combine their list of needers with their list of needs to generate all the logical combinations. Then they chose the combination of "who needs what" they would first want information about, given that information about needs might be available in three months. With that proviso, the staff decided that they most wanted information about "students' needs for skills in use of telephone."

Since the project staff had named some literature as being available to them, the needs analyst considered the literature as a potential source of definition of needs. If literature known to the project were already sufficient, it would not be a wise use of resources to establish other sources of information about needs. Consequently, the needs analyst asked the staff to [illegible] whether the literature was adequate, and if not, what information was lacking.

The staff had referred to the previously mentioned literature as being sources of information written by professionals in the field of mental retardation who are not connected with the DLS Project or its goals. The staff wanted to make that point because they felt it was

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important that they should be getting information from outside their own experience.

According to the staff, this literature potentially applied to all the programs and products that the DLS Project is working on. The needs analyst asked, "Are you citing these as the basic sources for needs information for all the programs?" A staff member replied, "Yes, for all the programs. Right. But, again I should say that they do not suffice. We are still in a bind. We don't get the kinds of information we need for them." Still following up, the needs analyst asked, "Can you be more specific about what is lacking in this information?" One staff member replied as follows:

> Let me give you an example. The National Association for Retarded Children has indicated certain "suggested areas of program emphasis for moderately retarded residents." In the category called "self-care, grooming and hygiene" there is a listing (Number 2) "improving personal appearance, dressing appropriately for non-retarded peers, caring for and purchasing personal clothing items." The problem with this category is: the objective is so vaguely stated and so ambiguous that we still do not know if a specific skill needs to be trained or not. The objectives in the literature we have cited are so very ambiguous, global, and cloudy that for the curriculum developer who has to get to the nitty-gritty details does not know whether or not the program he finally decides to develop is really needed. For instance, if we decided to develop a program on "The Use of the Spoon" -- does that jibe with what this document cites as the need, or does it not? We still don't know that. Surely, it goes under the category of being able to eat properly, but is that what they are looking for? Is that too specific? It simply is too ambiguous and too global an objective. We still don't have an answer to whether or not specific skills are needed.

The needs analyst asked, "Then if you had your 'd'ruthers' -- again, going back to the kinds of people who might be able to define the needs very specifically -- would you d'ruther go to somebody other than the

professionals? The aides, for example, or the parents, or ..." A staff member replied,

> Let me answer it this way. If the student could clearly and concisely express his won needs either through demonstrations or through having him just go through his daily routine and see what is missing -- it would be the neatest thing to have him define his own needs. But that's almost impossible or at least highly impractical from a measurement or methodological viewpoint. Therefore, I think we would rather have the professionals in the field define the need.

Since the literature had been a problem for the project staff, the needs analyst wanted to check further on the validity of the direct contact with the professionals, from the point of view of the project staff. The needs analyst said,

> Now if we were to go to some professionals that you would name with reference to a specific kind of need -- say, "eye contact" -- and ask those persons to imagine the need being fulfilled in the case of some real kids and their experience and to say what would be happening if the need were completely fulfilled, would you believe that most of those professionals would be able to provide specificity in response to that kind of question?

"Would they specify the outcomes?" a staff member responded. 'Yes, no doubt. They would be able to say things like, 'I would like to have the outcome of the program be that Jimmy and Johnny look at me when I'm talking to them, that they don't look someplace else and miss half of the things I'm saying.' Yes, they would know what eye contact is."

The needs analyst asked further, "Would this be true also with other programs that you are interested in having information about?" The staff members replied, "Yes." "Then let me repeat a kind of question," said the Needs Analyst. "Do you know anywhere in any existing literature or needs assessment studies or any other kinds

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of studies where that specificity is available?" The staff did not. "So in your judgment," the needs analyst said, "it is going to require going to those professionals with the appropriate questions and getting the answers directly from them?" A staff member said, "That's right to the best of our knowledge." The needs analyst then commented that it was important to know what sources the staff had checked and that the needs analyst would also search for additional sources if a needs analysis is carried out. These sources, he noted, would be provided to the staff for any possible use.

Then the needs analyst asked the project staff to name some professionals either by category or by specific names who they would respect to provide specific definitions of needs for the kinds of needs that the project is most interested in. The staff responded that the definers they were most interested in getting need definitions from were people (1) who are in the field of mental retardation, (2) who have direct contact with the students themselves, (3) who are advocates for the severely/moderately retarded, and (4) who have no specific allegiance or bias toward any federally funded project or any kind of specific approach to mental retardation. The needs analyst asked the staff how it would be possible to locate such people, and the staff recommended that the search be made through the National Association for Retarded Children, which might even have a committee to provide assistance.

Second, the staff wanted to have trainers of the severely or moderately retarded define the needs as long as the "advocate" professionals' definitions were provided, too, as a kind of validity and reliability check.

In the particular hypothetical conditions of this scenario, it is assumed that only a very small amount of money is available for measuring the extent to which needs are being fulfilled. (This may be the case for a number of needs analysis studies). Therefore the needs analyst determined to check whether the staff would utilize estimates of need fulfillment that might be obtained from the definers at the time the definers provide their definitions. The needs analyst explained there would be a number of threats to reliability and validity.

The needs analyst asked the staff if the definers they had just described would be reasonable persons also to provide direct observations of the extent to which needs they have defined were being met. The staff in effect said, "No, the job is too big." "Then you don't think," said the needs analyst, "that they could tell us how much, to what extent, those needs or attributes of needs were not occuring in this population of children?" "They would be able to make estimates, yes," replied the staff. "But not based upon empirical research -- just based upon their experiences." "Then would you want us to try to get estimates from them?" The staff agreed that they would want such information, especially since they had been informed that very little measurement resources were available at this time.

The staff then settled on some specific needs analyses phrases that the needs analyst would be expected to provide information about, initially. These three priority phrases in the form, "Who needs what, as defined by whom" were:

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-- Trainable mentally retarded students' needs for using the telephone, as defined by professional "advocates."

-- Trainable mentally retarded students' needs for using the telephone, as defined by their teachers or trainers.

-- Teachers' of such students needs for programs to train the use of telephone.

In concluding the identifying of information users' concerns, which was the purpose of this meeting in Denver, the needs analyst obtained specific citation of all the literature which the staff of this ongoing project had come across. The staff and the needs analyst conversed a little more about the process that they had been through and then the needs analyst asked a very important question concerning the process and the National Needs Analysis design. If the answer to this next question were negative, then there would be a serious question of whether to proceed. The needs analyst asked, "Would you please seriously consider this needs analysis process that you have experienced, and to some extent, read about? You have read the brief description of the National Needs Analysis and at least some of you have read the Connecticut report on Needs Analysis Methodology for Education of the Handicapped and other things that we have sent you. Therefore let me ask, does the process of needs analysis that has been described in those documents and that you have experienced today, does that process have 'face validity,' at least, to you?" The staff members replied, "Yes, it does." The needs analyst continued, "Pressing further, in other words, do you want to participate in a study where you are the information user or decision-maker and in which that design is employed for the purposes of providing

you with information about needs?" A staff member replied and the group clearly agreed,

> No doubt about it. It has face validity and that's why we are talking with you. It's one of the few things that does deal with needs assessment, and we need something like that. We would feel a lot more comfortable if we had some ways that . . . . if decisions don't come out to jibe with our personal feelings for it, we could deal with that problem later on. We want to be able to point to a system of coming up with these priorities. We don't want this project to just be going on the "seat of pants".

With this last reply and others that the staff had made during the day, the needs analyst was satisfied that the project staff would ascribe "decision-maker validity" to the process. This assumption meant that it was reasonable to continue the study to the next stage: obtaining definitions of needs.

B. Obtaining and Reporting Definitions of Needs. In carrying out the second objective, the needs analyst reviewed whatever literature could be found that seemed to relate to the highest priority "who needs what" identified by the DLS project staff: The need for information about trainable mentally retarded students' needs for using the telephone. This review of literature included an analysis of the documents that the project staff had already referred to, because it was conceivable that they had overlooked some specificity that might be found in that literature. The review of literature did turn up some categories of verbiage related to use of the telephone, and the needs analyst abstracted those for purposes of adding to the definition of need at a later stage. Some additional literature was located and abstracted.

The needs analyst contacted the National Association for Retarded Children in order to identify potential "advocate" definers of the need. Additional sources were used for access of trainers. A list of people was developed over a period of several weeks and those people were contacted to see if they were willing to participate. Fourteen "advocates" and twenty-one trainers agreed to spend up to several hours assisting in the needs analysis. The least amount of time which those definers said they would make available was an hour.

The needs analyst prepared a defining question and reviewed it with the staff of the DLS Project. They wanted some modifications in the wording, which were made, and the finally approved defining question read as follows:

> Some or all moderately or severely mentally retarded persons may need to use telephone communication or respond to telephone communications. We are interested in defining very specifically what those persons' needs really are for use of the telephone. Please respond to the following question on the basis of your actual experience with such persons and out of your knowledge of their needs.
>
> Imagine that some moderately or severely retarded persons are using the telephone as fully as they really need to. In that situation, you see them actually making and receiving calls. In that situation, which may be a public place, home or other setting, there is one or more telephone instruments and anything else that the retarded persons needs in order to use the phone. As you think of that situation, examine carefully what the retarded person is doing and saying. Write down in the space provided below, everything the retarded person might be doing in order to take care of his needs with respect to telephone communications.

A sample of eight definers, in each population (advocates, trainers) was asked to respond to the open-ended question. They responded by saying things like "the person is able to dial a seven digit number, is able to answer the telephone, is able to dial zero and give the operator some information," and so forth. All of their responses were analyzed into individual attributes (components) of the general need to use telephone communications. These attributes were combined into a list and converted into a survey to be sent to the larger group of the definers.

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In addition, because the project staff wanted to receive some measurement information in the form of estimates from these definers some provision was made made in the survey instrument to obtain very rough estimates of the extent to which the individual attributes were occuring. In other words, the definers were asked to estimate the extent to which the need was being fulfilled, in their experience, in terms of the components of the need. The definers were asked to respond to the basic question that was described above, but in this case they were given the set of attributes that they had produced in response to the open-ended question plus additional attributes that had been gleaned from the literature -- a total of 97 attributes in all. The attributes from the literature were justifiable as "tests of completeness" that were built into the instrument, and the definers were told that the attributes they were being asked to identify were mostly from their peers but to some extent were derived from the literature (which of course, may also have been a contribution of their peers). The definers were asked to make a check mark beside each attribute that they felt was an attribute of severely or moderately retarded persons and they were asked to circle the ten most important attributes of need. They were also asked to estimate whether each attribute that they checked was, for this population, "completely met," "somewhat met," or "not met."

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The survey instrument was sent. Each of the definers thus was able to consider all of the attributes provided by themselves and all other definers. A partial list of the hypothetical results of this second round survey (from advocates only) is shown in Figure 1, ranked according to weighted score.

These results were reported to the project staff, along with a description of the methods used to obtain this definitional information. Surprisingly for the DLS staff, the two definer groups (advocate and trainers) defined the needs and estimated the fulfillment very much alike. This was a small sample of the two groups of potential definers. It was not randomly selected from a known total population of advocates or trainers. The definers were not employing a specific observation plan for estimating need fulfillment. The project staff was cautioned about potential threats to validity and reliability.

In addition, the report of definitional information was sent by the needs analyst to the operators of the National Instructional Materials Information System for inclusion in the Needs Analysis section of that system and a copy of the report was given to the NCEMMH dissemination staff. The report was included in the catalog of all needs information available to anyone from the National Needs Analysis project. A copy of the report was included in the quarterly report to the Project Officer for NCEMMH.

C. Obtaining and Reporting Measurements of Need Fulfillment. Because of the limited resources, the only measurement information that was gathered was the estimates of need fulfillment made by the definer as reported in Figure 1.

Figure 1

Hypothetical Results of Second-Round Survey of "Advocates:" Definition and Estimate of Fulfillment of "Trainable Mentally Retarded Children's Needs for Use of Telephone"

N = 14. Weight represents one point for each time an attribute was checked as being needed plus ten points for each time an attribute was marked as being among the ten most important attributes of the need.

Rank	Weight	Attribute	Estimated Extent of Need Fulfillment: Met	Somewhat Met	Not Met	Total
1	71	Say "hello" and tell who they are: "Hello, this is . . .	15%	27%	58%	100%
2	70	Receive a call in order to orally relay a message	12%	31%	57%	100%
3	68	Get to phone when it rings before 5 rings	23%	27%	50%	100%
4	67	Hold receiver with mouth piece next to mouth and ear piece next to ear	19%	36%	45%	100%
4	67	Listen to operator	23%	29%	48%	100%
6	63	Dial 0 and give information	9%	19%	72%	100%
*						
*						
*						
97	9	Call Long Distance Person-to-Person	2%	7%	91%	100%

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Next steps. The scenario has reflected in simplified form only a single iteration of certain steps in needs analysis. With the reporting of the information, however, the needs analyst might immediately have begun a second iteration with other needs, needers and/or definers of concern to the DLS Project staff. Or the staff might have requested greater specificity regarding certain attributes of using the telephone. There are a number of possibilities.

One activity the needs analyst undertakes after reporting the information is to evaluate the utility of the information. She asks, "What reported information was used by whom for making what decisions?" "How complete was the reported information in terms of meeting the information users' requirement for information about certain needs?" "How well focused was the information in terms of the information users' ranking of the importance of the decisions?" "What additional information about needs would have been or would be useful in making those decisions?" The answers would be used by the needs analyst to revise her application of needs analysis procedures and to modify the procedures themselves, as necessary.

The DLS Project staff made use of the information as part of the following decisions (a partial list):

-- To develop separate programs for simple use of telephone, emergency calling, and coin-operated telephone use.

-- To defer indefinitely any programming for long distance calling.

-- To ask for needs analysis centered on each of the remaining scheduled programs in the DLS Project.

-- To ask for a broad study of needs for daily living skills in order to provide over-all priority information for the next few years.

Since the National Needs Analysis Design represents an ongoing iterative process, this brief scenario simply ends, as it began: at a point in time.

REFERENCE

Coffing, Richard T., Thomann, James B., Mattson, Cheryl T., and Merriman, Patricia S., "A National Needs Analysis Design -- Draft II." Columbus, Ohio: The National Center on Educational Media and Materials for the Handicapped, 1974.

APPENDIX D

A WORKBOOK FOR IMPLEMENTING NEEDS ANALYSIS METHODOLOGY: DRAFT I

by

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James B. Thomann
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Patricia S. Merriman

March, 1974

WORKBOOK FOR IMPLEMENTING
NEEDS ANALYSIS METHODOLOGY
DRAFT I
MARCH, 1974

I. Specifying Basic Scope and Priorities

A. Who is the Contract Decision-Maker?_____

B. What are the Contract Decision-maker's (C.D.M.'s) purposes for possibly having Needs Analysis done?

C. Does the C.D.M. need to know more about needs analysis procedures?

yes_____ no_____

(If yes provide some information -- suggestion: use a visual representation of the needs analysis process.)

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I. continued

D. Who does the C.D.M. think should be provided with information about needs? (i.e. Who are the potential Information Users)

E. What resources does the C.D.M. think are available for conducting needs analysis? (i.e. time, money, materials, people)

I. continued

F. What priorities does the C.D.M. have for providing information to the Information Users named? (in D above)
(i.e. which Information User (I.U.) should get data first, second, third etc.)

G. What percentage of the total resources should be spent on each Information User?
I.U. priority no. %

100%

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I. continued

H. How should the resources be allocated among the Information Users?

RESOURCES	INFORMATION USERS IN PRIORITY ORDER									
	1	2	3	4	5	6	7	8	9	10

I. Does C.D.M. want to make any changes in any of the decisions?

yes _____ no _____

(If so record the revisions.)

II. Identifying an Information User's Concerns

A. Name of the Information User

_____

Priority No. of the Information User

_____

B. Whose needs is the Information User concerned about meeting? (Use the "Needer List" [p. 6] to record the results of this question)

C. What kinds of needs is the Information User concerned about meeting? (Use the "Kinds of Need List" on p. 7)

D. Who does the Information User feel can best define the needs? (Use the "Definer List" on p. 8)

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"NEEDER" LIST

Who are the individual persons, groups or categories of persons whose needs you are concerned about?

NEEDERS

_____ _____
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"KINDS OF NEED" LIST

What kinds of needs are you concerned about meeting?

_____ Need for _____
_____ Need for _____
_____ Need for _____
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"DEFINER" LIST

Who can define the needs?

_____ As Defined by: _____

_____ As Defined by: _____

_____ As Defined by: _____

_____ As Defined by: _____

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_____ As Defined by: _____

_____ As Defined by: _____

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_____ As Defined by: _____

_____ As Defined by: _____

_____ As Defined by: _____

II. continued

E. What are the priority concerns--combinations of Needers, Needs and Definers (i.e. who needs what as defined by whom?) according to the Information User?

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III. Obtaining and Reporting a Definition of a Priority Concern

A. Name of Information User_____

B. The Concern to be defined:

Needers_____

Kind of Need_____

Definer_____

Information User's Priority for this Concern

_____

C. Information User's purpose for desiring definition of this concern.

D. Open-ended Question, approved by the Information User, for use in defining this concern.

III. continued

N.B. What follows are instructions to the Needs Analyst.

E. Collect and Report the Definition

1. Have Definers respond to the open-ended question.
2. Separate responses into discrete items
3. Eliminate redundant items
4. Create Survey Instrument

a. Repeat open-ended question at top of survey instrument.

b. Add the following directions to the end of the open-ended question.

Place a check ( ) next to each item that you feel is a part of x's need for y.

c. List the items in the following form.

_____ 1. items

_____ 2. items

.
.
.

_____ n. items

d. At the end of the instrument add the following directions.

"2) Now go back over the items you have checked and circle the ____ most important items"

"3) After you have done 1) go back over the items you have checked place an "F" after every item that is fuzzy i.e. that are not as specific (operational) as they can be."

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5. Administer the survey instrument to the Definers

6. Analyze the results by:

   a. Scoring 1 point for every item checked.

   b. Scoring 10 points for every item circled.

   c. Putting the items into rank order based on the weight obtained from adding the scores given as a result of a and b above.

   d. Counting the number of F's for every item.

7. If the ratio of F's to checks for any one item is greater than one to four determine whether additional defining (i.e. operationalization of the item) is needed. If so repeat D and E for those items.

8. Write a report to Information User including the following:

   a. What was done in obtaining the data.

   b. Any problems identified during the collection of data.

   c. All threats to validity

   d. The data collected

IV. Obtain and Report Measurement of Need Fulfillment

   A. For which of the defined needs does the Information User want further data on the degree of need fulfillment?

   B. In what priority order should these defined needs be measured?

DEFINED NEEDS	PRIORITY

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C. IDEAL MEASUREMENT PLAN FOR NEED:

Observational Technique

Direct (observer actually sees or hears the behavior

Natural (no conditions imposed which may alter the occurance of the behavior)

Unobstrusive (persons being observed are not and can never become aware that they are being observed)

Restraining Forces

(checks on the validity of the measurement plan)

Literature Search

Data Available

Technique Available

D. PRACTICAL MEASUREMENT PLAN FOR NEED:

Observational Technique

Direct

Natural

Unobstrusive

Recording Device

Sampling Technique

Data Analysis Procedure

Estimated Cost/Time/Resources

Alternate Plans

Approved by_____ Date
Information User

E. Implement the Measurement Plan

_____Pilot

_____Revise

_____Implement

F. Report the Measurement Data to the Information User including:

_____Observational Technique

_____Recording Device

_____Sampling Technique

_____Pilot Results

_____Revisions

_____Data Analysis Procedures

_____Data

_____Threats to the Validity of the Data

_____Cost/Time/Resources

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